

Claims

Claim 14 (previously presented): A virus-like particle comprising a protein subunit structure of a papovavirus particle, wherein the particle comprises a protein subunit in the form of a fusion protein comprising (1) a polypeptide sequence derived from a major coat protein of a papovavirus, and (2) an additional peptide sequence, other than a sequence from said major coat protein, fused to the N-terminal of polypeptide sequence (1).

Claim 15 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein comprises a sequence derived from a major coat protein L1 of a papillomavirus.

Claim 16 (previously presented): A virus-like particle according to claim 15, wherein said papillomavirus is a human papillomavirus (HPV) type 16 or 18.

Claim 17 (previously presented): A virus-like particle according to claim 15, wherein said fusion protein comprises a protein with a sequence selected from the group consisting of (i) a full sequence of a human papillomavirus L1 protein, (ii) a sequence from a human papillomavirus L1 protein having an N-terminal deletion of up to 10 amino-acids, and (iii) a sequence from a human papillomavirus L1 protein with an aminoacid substitution mutation.

Claim 18 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein comprises an immunogenic sequence derived from a protein of a pathogen.

Claim 19 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein sequence comprises a polypeptide binding domain that enables affinity purification.

Claim 20 (previously presented): A virus-like particle according to claim 14, that comprises (a) a conformational epitope corresponding to a native conformational epitope of the structure of a corresponding virus-like particle based on a major coat protein of unmodified

sequence, and (b) an immunogenic epitope present on an N-terminal extension of said major coat protein sequence.

Claim 21 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein comprises a sequence from a papillomavirus L1 protein fused, at its N-terminus, to a sub-sequence from another papillomavirus protein selected from the group consisting of human papillomavirus (HPV) E1, E2, E6, and E7.

Claim 22 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein comprises a peptide sequence comprising at least about 15 amino acid residues that provides at least one epitope of a protein other than said major coat protein.

Claim 23 (previously presented): A virus-like particle according to claim 14, wherein said fusion protein comprises an additional peptide sequence fused at the N-terminus of the major coat protein, wherein the additional peptide sequence comprises a polypeptide binding domain that enables affinity purification.

Claim 24 (previously presented): A fusion protein comprising (1) a polypeptide sequence derived from a major coat protein of a papovavirus, and (2) an additional peptide sequence, that is not a polypeptide sequence from the major coat protein, fused to the N-terminus of sequence (1).

Claim 25 (previously presented): A fusion protein according to claim 24, wherein the polypeptide sequence derived from a major coat protein is a polypeptide sequence derived from a major coat protein L1 of a papillomavirus.

Claim 26 (previously presented): A fusion protein according to claim 25, wherein said papillomavirus is human papillomavirus (HPV) type 16 or 18.

Claim 27 (previously presented): A fusion protein according to claim 24, comprising a sequence selected from the group consisting of (i) a full sequence of a human papillomavirus L1 protein, (ii) a sequence from a human papillomavirus L1 protein having an N-terminal deletion of up to 10 amino-acids, and (iii) a sequence from a human papillomavirus L1 protein with an amino acid substitution mutation.

Claim 28 (previously presented): A fusion protein according to claim 24, comprising an immunogenic sequence derived from a protein of a pathogen.

Claim 29 (previously presented): A fusion protein according to claim 24, further comprising a binding domain to enable affinity purification.

Claim 30 (previously presented): A fusion protein according to claim 24, comprising a sequence from a papillomavirus L1 protein fused, at its N-terminus, to a sub-sequence from a further papillomavirus protein selected from the group consisting of human papillomavirus (HPV) E1, E2, E6 and E7.

Claim 31 (previously presented): A fusion protein according to claim 24, comprising a peptide sequence comprising at least about 15 amino acid residues, wherein said peptide sequence provides at least one epitope of a protein other than said major coat protein.

Claim 32 (previously presented): A fusion protein according to claim 24, further comprising a further peptide sequence fused at the N-terminus of the major coat protein, wherein said further peptide sequence comprises a his-tag or an epitope recognized by an antibody.

Claim 33 (canceled).

Claim 34 (previously presented): The virus-like particle according to claim 17, wherein said L1 protein has a C-terminal deletion.

Claim 35 (previously presented): The virus-like particle according to claim 18, wherein said pathogen is a virus.

Claim 36 (previously presented): The fusion protein of claim 27, wherein said L1 protein has a C-terminal deletion.

Claim 37 (previously presented): The fusion protein of claim 28, wherein said pathogen is a virus.

Claim 38 (canceled).

Please add the following new claims

Claim 39 (new): The fusion protein of claim 28, wherein the immunogenic sequence comprises at least protein residues 50 to 64 of human papilloma virus E1.

Claim 40 (new): The fusion protein of claim 39, wherein the immunogenic sequence comprises protein residues 384 to 403 of human papilloma virus E1 protein.